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ABSTRACT

The Florida Interlibrary Loan Improvement Project (FILIP), initiated in 1979 by the Florida State Library to examine and analyze the interlibrary loan patterns and problems of the Florida Library Information Network (FLIN), compared the use of the OCLC Interlibrary Loan subsystem as a mode of communication between FLIN member libraries to the use of an established system employing closed-circuit teletype, TWX (an automated interlibrary loan system), and mail courier for interlibrary exchange between FLIN members. The systems were run in parallel for a 2-month period, and their efficiency and cost-effectiveness were analyzed. Use of the OCLC Interlibrary Loan subsystem proved more efficient and cost-effective than the TWX system, but closed-circuit teletype was found to be the most efficient method for sending messages between major FLIN resource centers. It was recommended that the closed-circuit teletype system be retained for interlibrary communication, that the OCLC Interlibrary Loan subsystem be adopted for the referral of requests to university and out-of-state libraries, and that the use of TWX, which was no more efficient than filling requests by mail, be discontinued. Data are summarized in nine tables, and the 12 different log and time-study forms used by project participants are reproduced in the report. (JL)

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FLORIDA LIBRARY INFORMATION NETWORK PROJECT:

A COMPARATIVE STUDY OF OCLC, TWX, U.S. MAIL, AND CLOSED-CIRCUIT TELETYPE

February 2, 1981 - March 31, 1981

With Recommendations

Prepared for Florida Department of State
George Firestone, Secretary of State
May 1981

by

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and
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State Library of Florida
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FLORIDA LIBRARY INFORMATION NETWORK

LIBRARIES

State Library of Florida, Tallahassee

Jacksonville Public Library

Miami-Dade Public Library

Orlando Public Library

Tampa-Hillsborough County Public Library

Florida A&M University, Tallahassee

Florida Atlantic University, Boca Raton

Florida International University, Miami/North Miami

Florida State University, Tallahassee

University of Central Florida, Orlando

University of Florida, Gainesville

University of Miami, Coral Gables

University of North Florida, Jacksonville

University of South Florida, Tampa

University of West Florida, Pensacola

DESCRIPTION OF FLIN

The FLORIDA LIBRARY INFORMATION NETWORK (FLIN), was initiated in 1968. Originally, it was a closed-circuit teletype system which included the State Library, with the Jacksonville Public Library and the Miami Public Library acting as resource centers. In January 1970, this circuit was expanded to include the Orlando Public Library and the Tampa Public Library. At the same time, TWX machines were installed in the State Library as well as in all State University Libraries. The University of Miami, a private institution, was also added at this time because of its major research collection. In 1972, when two new State Universities opened, those libraries were also added to FLIN. FLIN now consists of the State Library, the four largest public libraries in the state, the nine state university libraries, and one private university library.

In Florida, the State Library is the nucleus and bibliographic center for FLIN. Over five hundred libraries of all types submit interlibrary loan requests to the State Library for processing. If possible, the request is filled from the State Library's collection. Those requests not filled by the State Library are referred to the four public libraries over the closed circuit teletype hookup. Requests not filled by one of the four and of a research nature are then verified and referred to one of the state university libraries, or to the University of Miami by TWX, or to Florida State University Library by courier. If necessary, the request is referred to other libraries in Florida or to out-of-state libraries, always using certain protocols.

FLORIDA INTERLIBRARY LOAN IMPROVEMENT PROJECT

The last ten years have seen a substantial growth in the FLIN network. Florida's increasing population, together with better library service generally available throughout the State, has led to an increasing demand on all libraries. At the same time, inflation and reduced budgets for libraries have made resource sharing more important than ever.

FLIN processed 38,083 interlibrary loan requests in 1971. By 1980, that figure had increased to over 73,000.

In December 1979, the State Library initiated a project with the University of Central Florida to examine and analyze the interlibrary loan patterns and problems of FLIN. The Florida Interlibrary Loan Improvement Project (FILIP) found the present system cumbersome and inefficient. Based on these results the State Library began experimenting with alternatives to insure network efficiency. The chief factor in this experimentation was the availability of the OCLC Interlibrary Loan Subsystem.

When OCLC first offered the Interlibrary Loan Subsystem on a trial basis in early 1979, some FLIN libraries were included in the original test group. However, the OCLC Interlibrary Loan Subsystem was designed as a library-to-library medium. There were problems of filling in due dates, shipping and return dates, etc., if a library was acting as a referral center as the State Library does for FLIN. After the trial period was over, and the subsystem was available to OCLC members at large, the State Library used the subsystem only for requests for its own patrons.

The FILIP project disclosed that other states were successfully using the OCLC subsystem for referral requests. In addition, it was realized that the daily list of unverified interlibrary loan requests sent to the four public library resource centers over a closed-circuit teletype was cumbersome and inefficient. Furthermore, the use of TWX to contact university libraries was also becoming increasingly unsatisfactory, due to the need for complicated record keeping and the fact that quite often the libraries did not respond via TWX whether or not they were filling the request.

When looking for ways to improve the work-flow of the network, the use of the OCLC subsystem seemed attractive. The OCLC Interlibrary Loan Subsystem was able to supply five locations for less than the cost of sending one message over TWX. However, not all FLIN libraries were using the subsystem or even accepting requests over it. Furthermore, there were still distinct advantages to the closed-circuit teletype system with the public library resource centers. On an administrative level, some directors of FLIN libraries did not wish to wholly commit their libraries to using only the OCLC subsystem.

IMPLEMENTATION OF THE TEST PERIOD

Making changes in a network encompassing fourteen other libraries required planning and experimentation. It was essential to prove that new procedures and new modes of communication would be more efficient and cost-effective than our current teletype network.

After meeting with the directors of FLIN libraries to obtain concensus on the future of FLIN operations and agreement for their libraries' participation in the proposed test period, a working level meeting was held to outline the workflow, procedures, and uniform statistical methods to be followed by all libraries during the test.

The basic framework of the test was that requests for material not supplied by the State Library would be referred to supplying libraries in FLIN over two tracks, one being closed-circuit teletype and TWX, and the other the OCLC subsystem. Records of times entered into each track, time required for handling, and how long it took for the material to be shipped, would be kept and analyzed to show the efficiency and cost of both tracks.

The State Library began operation of a dual network for two months beginning February 2, 1981, to determine whether the OCLC Interlibrary Loan Subsystem was superior to the current system. A major change implemented at this time was the verification of all interlibrary loan requests. The procedure had been that the State Library supplied those requests in its collection and available for loan. All other requests were placed unverified on a daily list via the

closed-circuit teletype to the four public library resource centers. This practice dated from the late 1960's when the State Library did not have a complete set of the National Union Catalog or OCLC to verify and find locations. Requests not supplied by a public library resource center were then verified and referred to another FLIN library, or out-of-state, if it was for research material.

Use of OCLC/Interlibrary Loan required that all requests be verified over OCLC first. This was a major change in the workflow of FLIN. It was also the basis during the study for deciding which track the request was to take: OCLC or teletype-TWX-mail. If only Miami and Tampa were identified as locations, requests were placed on the closed circuit-TWX-mail track. If only Jacksonville or Orlando were identified, the requests were placed on OCLC. If only universities were shown, the requests were evenly distributed between the two systems. Also, requests for out-of-state locations or for other Florida locations were referred either by using ALA interlibrary loan forms and sending them by mail or by adding them to the OCLC lender sequence. In any case, the workload was calculated to be nearly equal for both tracks.

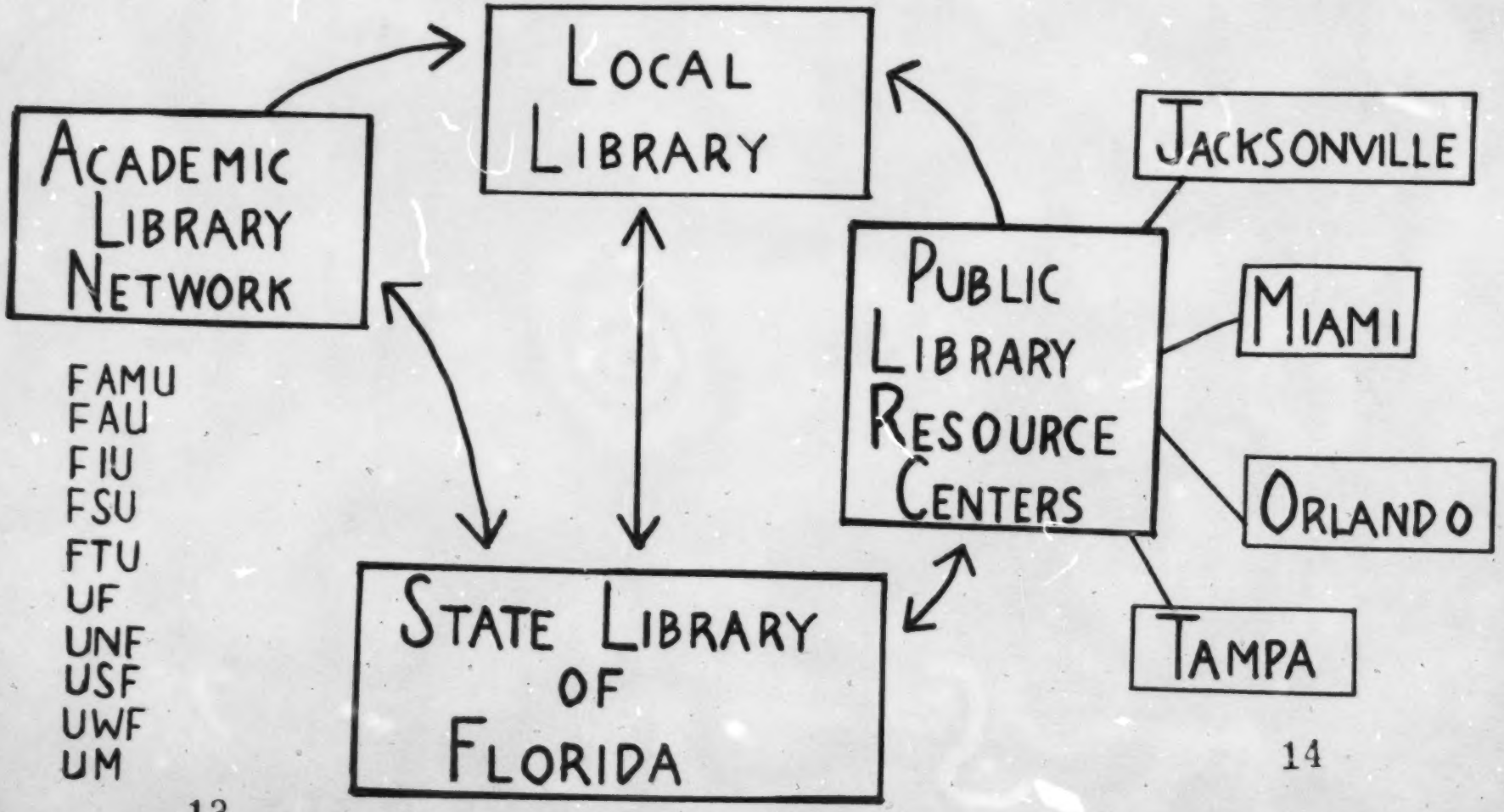
Verifying every request processed over the network proved to be time-consuming. Four librarians, three paraprofessionals, and three clerical level employees were involved. In addition to the heavy volume, other factors such as multiple records for various editions in the OCLC data base, downtime, and slow response time, created a bottleneck at the initial stage of the process.

Requests for material owned by Florida State University were handled outside the two parallel systems and were not included in the test. Since Florida State University is near the State Library, a daily courier service delivers the requests to them. Florida State University receives a special grant from the Library Services and Construction Act Title III to provide photocopies of periodical articles and to have its collection used more heavily for interlibrary loan than the other universities in FLIN. If Florida State University was shown as a location, the request was always sent there first. If FSU was unable to fill the request, the verified request was then reviewed for placing on one of the two tracks.

During the test, Florida State University was used first. Normally FLIN uses the following protocols:

1. Four public library resource centers
2. Florida State University
3. Smaller universities (Florida Agricultural and Mechanical University, Florida Atlantic University, Florida International University, University of Central Florida, University of North Florida, University of South Florida, University of West Florida)
4. Larger universities (University of Florida, University of Miami)
5. Other Florida locations
6. Nearest (SOLINET) locations, using public libraries before academic libraries.
7. Locations in other regions, using public libraries before academic libraries.

FLORIDA LIBRARY INFORMATION NETWORK: 1981



As noted previously, the FILIP study disclosed that other state libraries were using the interlibrary loan subsystem for referring requests. For example,in Texas the State Library and resource libraries use postcards to obtain all information necessary to complete a transaction over OCLC. It was felt in Florida that using the subsystem the way OCLC mandated was not the most efficient way. Using postcards would be both time consuming and expensive.

The State Library of Florida decided if an OCLC request for a monograph was filled by a Florida library, N/A would be entered as the due date, the same practice which has been followed in supplying photocopies or non-returnable material. When the State Library acknowledged receipt of the material shipped to the borrowing library, the transaction was completed. This allowed for avoiding time-consuming updating of records and for the maximum use of the subsytem for requests filled by Florida libraries. However, when requests were referred out-of-state, it could not be expected that the supplying library would understand and follow this procedure. Therefore, by modifying the practice used in Texas, a postcard was mailed to libraries which had their request processed over OCLC and filled by an out-of-state library. After the material had been received, used, and returned, the borrowing library filled in the needed information and returned the postcard to the State Library to enable the latter to update and complete the transaction. To emphasize and remind Florida supplying libraries of this procedure, however, the State Library usually entered "use N/A" in blinking reverse video in the "Borrowing Notes" field.

In addition to the protocols, other policies followed in handling requests were:

1. Not going beyond the FLIN libraries for requests that the patron had not indicated as "research use."
2. Not going out-of-state for requests originating from school libraries.
3. Not going out-of-state for requests originating from correctional institution libraries.

What follows is a detailed description of the various aspects of the test on the part of all network libraries. Tables detailing workload, turnaround time, etc., are discussed in this context.

FLORIDA LIBRARY INFORMATION NETWORK

You MUST return this card to the State Library of Florida

OCLC/ILL #_____ Date _____

Author _____

Title _____

This request was referred to _____ via OCLC and the material was shipped _____ In order to clear our computer records, you MUST supply us with the following information.

Date book was received _____

Date book was returned to the lending library _____

••• RETURN THIS CARD TO THE STATE LIBRARY OF FLORIDA WHEN THE BOOK IS RETURNED TO THE LENDING LIBRARY •••

DISTRIBUTION

During the study, every effort was made to distribute the interlibrary loan requests evenly between the two parallel systems. Of the 3,469 original requests processed during the project, 1,809 were processed using the Closed Circuit Teletype-TWX-Mail track while 1,660 were handled using the OCLC Interlibrary Loan Subsytem. Including those requests which had to be referred to more than one library, 523.6 hours of staff time were used during the study; 222.6 hours were spent processing requests via OCLC,while 297 hours were spent handling requests on the other track. Staff was shifted from the OCLC track to the Closed Circuit Teletpye-TWX-Mail track in the latter portion of the study to clear up backlogs which had developed, explaining the over seventy hours difference of staff time spent on the two systems (see Table A).

TABLE A

DISTRIBUTION OF REQUESTS

	ORIGINAL REQUESTS PROCESSED	REQUESTS REPROCESSED	TOTAL REQUESTS PROCESSED	TOTAL TIME TO PROCESS REQUESTS
TWX, MAIL AND CLOSED CIRCUIT TELETYPE	1809	477*	2286	297 hrs.
OCLC	1660	15	1675	226.6 hrs.
TOTAL	3469	492	3961	523.6 hrs.

* This figure is incomplete since 46.2% of the requests in this category are still pending.

VERIFICATION

Much concern has recently been expressed about OCLC's continuing problem of "slow response time" and "down time." Even though an hour by hour breakdown was not essential to the study, it was felt this type of breakdown would be beneficial to all libraries using OCLC. In addition to this breakdown during Monday - Friday 8:00-5:00, it was felt that response time records for requests verified during evenings and Saturdays would also prove useful. The verification process began when the request was picked up and was completed when locations were obtained. Whenever necessary, multiple editions and/or screens were checked.

Of the 4,525 verified during the study, the average time to verify one request was 2.48 minutes. During the regular working day the average time to verify a request was 2.88 minutes. During evenings it was 1.73 minutes per request and on Saturdays it was 1.75 minutes per request. Between 8:00-5:00 Monday - Friday the fastest response time was 2.47 minutes per request from 3:00-4:00 while the slowest response time was 3.20 minutes per request from 2:00-3:00. The nearly one minute difference between the fastest and slowest time periods during Monday-Friday might not seem impressive, but when the volume of requests handled is considered, it makes a difference. In the State Library of Florida's case, one minute per request multiplied by an annual volume of 75,000 requests, creates 75,000 additional minutes or 1250 additional hours of work for the staff (see Table B).

TABLE B

TIME STUDY FOR VERIFICATION

	TIME VERIFIED	NUMBER VERIFIED	AVERAGE TIME TO VERIFY A REQUEST
8 - 9	542.5	190	2.85
9 - 10	646.5	244	2.65
10 - 11	695	226	3.07
11 - 12	1338	449	2.97
12 - 1	952.5	356	2.67
1 - 2	614.5	220	2.67
2 - 3	1804	564	3.20
3 - 4	785.5	318	2.47
4 - 5	1083	371	2.92
8 - 5	8461.5	2938	2.88
After 5	1189	686	1.73
Saturday	1583.5	901	1.75
Total	11234	4525	2.48

OCLC

The capability of the OCLC Interlibrary Loan Subsystem to automatically transfer one request to five successive locations, its ability to automatically transfer the bibliographic information to the work form, and the four day limit a supplier has to answer a request, were the main reasons the subsystem's results were so impressive. Of the 1,660 requests processed using OCLC/ILL, 75.6% were filled, 21.5% were unfilled and only 2.9% were pending (see Table C). In addition, all requests processed and filled using OCLC were shipped within thirteen working days while all those requests which came back with negative answers were completed within fifteen days. 33.5% of those requests processed and filled via OCLC were shipped within one day, 54.1% were shipped within two days, 70.9% were shipped within three days and 95.1% were shipped within seven days. The first library assigned on the lender sequence filled 52.6% of the 1,256 requests filled using OCLC, the second library filled an additional 21.4%, the third library filled an additional 16.4%, the fourth library filled an additional 6.9% and the fifth library an additional 2.6% (See Table D). In addition to an excellent turn-around time, the subsystem allowed for filling almost ten percent more requests than is normally filled because the State Library rarely has an opportunity to try five locations because of limited staff time. Since 46.4% of the requests were filled by the second to fifth libraries (See Table D), it shows that almost one-half of the requests processed need to be referred to more than one library. If the 1,256 requests which were processed and filled using the subsystem were processed using

conventional systems, 1,074 additional processings would have been required to obtain the same results.

Considering the fact that it takes 14.82 minutes to process one request using the TWX at a cost of $4.21 per filled request and it takes 17.39 minutes to process one request using the U.S. mail at a cost of $2.82 per filled request compared to 8.27 minutes to process an OCLC request at a cost of $1.60 for five locations, it makes the comparison even more convincing. (See Tables H and I).

TABLE C

REQUESTS PROCESSED BY SLF STAFF

COMPILED APRIL 9, 1981

EFFICIENCY PORTION OF STUDY ON ALL REQUESTS
PROCESSED FROM FEBURARY 2 - MARCH 31, 1981

	REQUESTS	FILLED	NOT FILLED	STATUS PENDING
A. MAIL	402	102(25.4%)	54(13.4%)	246(61.2%)
B. TWX	216	97(44.9%)	25(11.5%)	94(43.6%)
C. CCT	1191	406(34%)	310(26%)	0
D. REQUESTS PROCESSED BY TWX OR MAIL AFTER CCT	475	36(7.5%)	17(3.5%)	422(89%)
TOTAL OF A, B, C D	1809*	641(35.4%)	406(22.4%)	762(42.2%)
E. OCLC	1660	1256(75.6%)	357(21.5%)	47(2.9%)
GRAND TOTAL	3469	1897(54.7%)	763(22%)	809(23.3%)

* Does not include Category D which has been included in Category C

TABLE D

REQUESTS PROCESSED BY SLF STAFF

ANALYSES OF OCLC REQUESTS
FROM FEBRUARY 2 - MARCH 31, 1981

REQUESTS	1660	
FILLED	1256 (75.6%)	EXTRA PROCESSINGS REQUIRED
NOT FILLED	357 (21.5%)	IF PROCESSED OVER CCT, TWX
STATUS PENDING	47 (2.9%)	OR MAIL 1074

LIBRARY ON THE LENDER SEQUENCE TO FILL THE REQUEST — NUMBER OF DAYS TO FILL A REQUEST

		1	2	3	4	5	6	7	8	9	10	11	12	13
(661)	1	390	154	97	20									
(269)	2	19	71	65	61	29	17	3	4					
(206)	3	12	31	40	34	31	28	15	10	4	1			
(87)	4	1	2	5	6	5	18	21	7	7	7	6	1	1
(33)	5			3	5	2	3	6	1	4	5	4		
		422	258	210	126	67	66	45	22	15	13	10	1	1

REQUESTS REPORTED SHIPPED WITHIN

1 DAY	422	33.5%
2 DAYS	680	54.1%
3 DAYS	890	70.9%
4 DAYS	1016	80.1%
5 DAYS	1083	86.2%
6 DAYS	1149	91.5%
7 DAYS	1194	95.1%

ALL REQUESTS PROCESSED VIA OCLC AND FILLED WERE SHIPPED WITHIN 13 DAYS

THE AVERAGE TIME TO RECEIVE A NO ANSWER VIA OCLC WAS 7.5% DAYS WITH 15 DAYS BEING THE LONGEST PERIOD NECESSARY TO RECEIVE A NO ANSWER

TABLE E

ANALYSES OF REQUESTS PROCESSED
OVER TWX, MAIL AND CLOSED CIRCUIT TELETYPE

TWX

Library	Number of Days 1	2	3	4	5	6
1	41	33	9	5	2	2
2		3			2	2

MAIL

ALL FILLED BY FIRST LIBRARY

DAYS	
3	1
4	9
5	7
6	7
7 - 10	22
11 - 15	21
16 - 20	21
21 - 25	9
26 - 37	5

12.3 DAY AVERAGE

CLOSED CIRCUIT TELETYPE

	1 day	2 days	3 days
1st library	299	10	-
2nd library	38	21	2

After Closed Circuit Teletype

2nd library -	10	16 days
3rd library	15	17.5
4th library	1	34

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TABLE F

TIME-MOTION AND EFFICIENCY INFORMATION
FOR THE FLIN RESOURCE LIBRARIES

	MINUTES TO PROCESS** ONE REQUEST		REQUESTS FILLED		PERCENT FILLED	
	OCLC	TWX	OCLC	TWX	OCLC	TWX
University of South Florida	13.36	10.42	75	30	56%	52%
University of North Florida	12.28	10.03	101	39	62%	66%
University of West Florida	12.98	12.81	68	6	50%	27%
University of Miami	11.11	8.36	41	15	48%	50%
Florida International University	11.90	14.55	80	15	63%	66%
University of Central Florida	7.79	8.83	56	19	35%	39.5%
University of Florida	19.71	18.05	57	13	53.5%	32%
Florida A&M University	*	*	1	1	*	11%
Florida Atlantic University	*	*	66	8	*	24%
Jacksonville Public Library	13.69	-	217	-	35%	-
Orlando Public Library	4.95	-	215	-	26%	-
	CCT		CCT		CCT	
Tampa Public Library	6.75		176		33.2%	
Miami Public Library	*		172		*	
	COURIER		COURIER		COURIER	
Florida State University	-		759		62%	

*Incomplete data

** In general, the lower the percent filled, the fewer minutes it took to process one request.

TABLE G

AVERAGE TIME IT TOOK ALL LENDING LIBRARIES TO RECEIVE AND FILL ONE INTERLIBRARY LOAN REQUEST

TRANSMISSION MEDIUM

OCLC		TWX		CLOSED CIRCUIT TELETPYE	
Requests processed	2154	Requests processed	234	Requests processed	487
File maintenance	.54	File maintenance	.55	File maintenance	.73
Time to print requests	1.51	Time to notify State Library	1.67	Time to notify State Library	.59
Time to update transaction	1.52				

IN-LIBRARY PROCEDURES

OCLC		TWX		CLOSED CIRCUIT TELETYPE	
Time to search requests in card catalog or at terminal	1.44	Time to search requests	1.43	Time to search requests	.98
		Time to retrieve material	4.03	Time to retrieve material	1.22
Time to retrieve material from shelves	2.17	Time to ship material	3.36	Time to ship material	3.23
Time to ship material	3.56				
TOTAL Minutes to fill one request	10.74	Minutes to fill one request	11.04	Minutes to fill one request	6.75

TABLE H

TIME STUDY FOR LOANS SECTION STAFF

OCLC		TWX		MAIL		CLOSED CIRCUIT TELETYPE	
Requests processed	1675	Requests processed	289	Requests processed	483	Requests processed	1514
Sending (calling up record, assigning locations, filling in necessary information)	2.71	Preparing tape	5.29	Typing ALA form	6.2	Sending list	.51
Message file maintenance	3.08	Sending tape	2.61	Proof reading	.79	Filing	.05
Verifying	2.48	Filing	.15	Filing	.48	Answers	.45
8.27 minutes for 5 locations		Answers	3.18	Answers	3.31	Keeping log and preparation	.44
		Verification	2.48	Mailing	3.02	Verifying	2.48
		Preparation	1.11	Preparation	1.11	3.93 minutes for 1 location	
		14.82 minutes for 1 location		Verification	2.48		
				17.39 minutes for 1 location			

TABLE I

The average cost to complete and to process an average interlibrary loan transaction not including the cost to the filling library. This does not include supplies.

		Cost to fill* one request	Cost of one processing
TWX	1.06 x 2 (staff cost)**	2.12	1.06
	2.09 x 1 (communication cost)***	2.09	2.09
		4.21	3.15
MAIL	1.23 x 2 (staff cost)**	2.46	1.23
	.18 x 2 (communication cost)	.36	.18
		2.82	1.41
OCLC	.65 x 1 (staff cost)**	.65	.65
	.95 x 1 (communication cost)****	.95	.95
		1.60	1.60
CCT	.28 x 2 (staff cost)**	.56	.28
	.38 x 1 (communication cost)***	.38	.38
		.94	.66

*The average number of referrals necessary to fill a request was two.

**This figure was derived by taking the average salary for the appropriate position classification plus 25% for benefits. Then the time it took to process one request was divided to reflect a percentage of an hour. This percentage was then multiplied by the hourly rate.

***This figure was derived by taking the total cost for closed-circuit teletype line, Western Union bills, etc., during the last fiscal year and dividing it by the number of requests filled during that time.

****This figure is OCLC's charge for processing one request using the subsystem. Since the terminals would be kept to verify requests even if OCLC/ILL was not used, the cost of the modem, installation, etc., was not included. SOLINET does not charge a surcharge for use of the ILL subsystem.

ADDENDUM

Effective July 1, 1981, the charge for processing one interlibrary loan request using the OCLC Interlibrary Loan Subsystem will be increased to $1.20. This coupled with a SOLINET surcharge of 14¢ brings the charge for each transaction to $1.34. The State Library of Florida felt there should be some analysis reflecting this new cost. The following table compares the cost of filling and processing one request using OCLC with the cost of filling and processing one request using the TWX, the Closed Circuit Teletype and the U.S. Mail.

			Cost to fill* one request	Cost of one processing
TWX	1.06 x 2	(staff cost)**	2.12	1.06
	2.09 x 1	(communication cost)***	2.09	2.09
			4.21	3.15
MAIL	1.23 x 2	(staff cost)**	2.46	1.23
	.18 x 2	(communication cost)	.36	.18
			2.82	1.41
OCLC	.65 x 1	(staff cost)**	.65	.65
	.95 x 1	(communication cost)****	1.34	1.34
			1.99	1.99
CCT	.28 x 2	(staff cost)**	.56	.28
	.38 x 1	(communication cost)***	.38	.38
			.94	.66

*The average number of referrals necessary to fill a request was two.

**This figure was derived by taking the average salary for the appropriate position classification plus 25% for benefits. Then the time it took to process one request was divided to reflect a percentage of an hour. This percentage was then multiplied by the hourly rate.

***This figure was derived by taking the total cost for closed-circuit teletype line, Western Union bills, etc., during the last fiscal year and dividing it by the number of requests filled during that time.

****This figure is OCLC's charge for processing one request using the subsystem. Since the terminals would be kept to verify requests even if OCLC/ILL was not used, the cost of the modem, installation, etc., was not included.

TWX

When the TWX machine was installed at the State Library of Florida in 1970, the staff took pleasure in demonstrating it to visitors as the latest in interlibrary loan technology. Eleven years later, it has become an obsolete piece of equipment which experienced numerous mechanical difficulties during the test. Of the 216 requests processed using TWX, 44.9% were filled, 11.5% were unfilled and 43.6% were still pending ten days after completion of the study. (See Table C). There are two reasons for the large percentage of requests which are still pending. The first is that lending libraries either forgot to notify the State Library that they were supplying or not supplying the material, or possibly did not want to spend the 44¢ it would cost to provide notification. The second reason is that the study showed that using TWX was a time-consuming and cumbersome process. Preparing long paper tapes, calling libraries and getting busy signals, being cut off, having long tapes mutilated by the machine, were some of the reasons it took the staff 14.82 minutes (see Table H) to process one request using TWX. Each additional processing of a request using TWX took 11.23 minutes as the sorting and numbering had been accomplished and the request was already verified. Processing only five or six requests in an hour did not allow staff sufficient time to process requests which required referral to a second or third library. Staff time was spent processing new requests arriving each day.

Not only was TWX time-consuming and expensive at $4.21 per filled request (see Table I), but it proved to be inefficient. The analyses showed a good response from the first library to whom a request was referred, with 74 or 76.2% (see Table E) of those requests filled being shipped by the first library within two working days. However, once past the first library, the response was poor. At the end of the study, second library responses were beginning to be received, and requests to the third library were being initiated. When compared to the OCLC subsystem where many requests went to five libraries and never took longer than fifteen working days to receive a final reply, the TWX is inefficient.

CLOSED CIRCUIT TELETYPE

Prior to implementation of the study, the concensus was that the closed-circuit teletype system was obsolete and FLIN should discontinue using it. The FILIP study recommended that FLIN "phase out the TWX and teletype linkage with the FLIN resource libraries [and] encourage utilization of the OCLC Interlibrary Loan Subsystem for sending and receiving requests."[1] This study showed that with one major change, the verifying and obtaining locations prior to placing requests on the circuit, the teletype system could become a highly efficient and cost-effective method for referring requests.

The five teletype machines which comprise the circuit cost the State Library $6,000 annually. This does not include supplies. There is no additional cost for placing requests on the circuit as there is for referring requests over OCLC, the TWX, or the U.S. mail. Considering the fact that it takes but 3.93 minutes for one complete processing of a request using the teletype and that the cost per filled request is but 94¢, it seems logical to use the closed-circuit teletype first whenever possible. When compared to TWX, which costs $4.21 and takes 14.82 minutes per transaction, to the U.S. mail which costs $2.82 but takes 17.39 minutes per transaction and to the OCLC subsystem which costs $1.60 per processing, the teletype system is a bargain. (See Tables H and I).

[1]Laurie S. Linsley. Florida Interlibrary Loan Improvement Project: Final Report. (Tallahassee: Florida Department of State, State Library of Florida, 1980) 99p.

Of the 1,191 requests processed using the teletype system, 34% were filled, 26% were unfilled, and 40% were referred to the TWX or the U.S. mail portion of the test. (See Table C). The 40% were requests which the public libraries were unable to fill but state university libraries were also listed as owning the material. The Tampa Public Library and the Miami Public Library notified the State Library within three working days whether they were supplying the material for requests referred to them. This track experienced a backlog once the requests had to be referred to another library by TWX or mail. Of the 475 requests referred by TWX or U.S. mail after being processed using the closed-circuit teletype, only 7.5% were filled, 3.5% were unfilled and 89% were still pending (see Table C). The TWX and mail suffer by comparison to the high fill rate and fast turn-around time for requests referred to more than one library using OCLC (See Table D). However, since the teletype system is prepaid, it proved to be cost efficient when using it before OCLC when possible. For those requests which must be referred to other libraries after the teletype system, OCLC should replace TWX and the mail.

U.S. MAIL

The U.S. mail proved to be the least efficient of the systems tested. Of the 402 requests processed by using the mail, 25.4% were filled, 13.4% were unfilled and 61.2% were still pending. (see Table C). All requests filled by mail were filled by the first library receiving them. The slowness of the mail and the amount of staff time to process one request on an ALA form, 17.39 minutes, (see Table H) did not allow time to receive responses from the second library during the study. Of the 102 requests filled using the mail, seventeen were shipped within five days. However, at the other end of the spectrum, it took longer than twenty days to have fourteen requests shipped, with 37 days being the longest. (see Table E). Considering that none of those requests were filled by a second library, it might take months for a request to be filled if it had to be referred to two or more libraries. One must remember OCLC's capability to transfer one request automatically to five libraries and all requests being completed within fifteen working days. It is evident that the mail should be used as little as possible. If TWX is discontinued as has been recommended, the mail could continue to be used for single locations, either of FLIN universities or other libraries in Florida or out-of-state.

FLIN SUPPLYING LIBRARIES

During the study, FLIN libraries kept records (see forms G-L) to enable the State Library to ascertain the efficiency and cost of OCLC, TWX and the closed-circuit teletype for the supplying library. For lending libraries, the closed-circuit teletype system proved the most cost-effective. It took a library only 6.75 minutes to fill one request over the teletype system compared to 10.74 minutes to fill one request using OCLC and 11.04 minutes to fill one request using TWX (see Table G). The amount of time it took a library to fill a request referred to them over OCLC varied greatly depending on their access to an OCLC terminal and how comfortable they felt with the subsystem. For example, the Orlando Public Library and the University of Central Florida, both of which use the subsystem consistently, took only 4.95 minutes and 7.79 minutes respectively to fill a request. (See Table F). On the other hand, the University of Florida, which had difficulty in securing access to an OCLC terminal and had to remain at the terminal when the system was slow or down, averaged 19.71 minutes to fill a request. (See Table F). Like other libraries which did not have experience using the subsystem, their time improved as the test continued.

Upon first review, it seems that the time necessary to retrieve material differed significantly depending on the method of communication used to process a request. (See Table G). However, a closer analysis shows that this difference is caused by the type of library a request was referred to and not by the system used to process it. Requests

processed using the closed-circuit teletype system were referred only to public libraries and required only 1.22 minutes to retrieve the material. Requests processed using OCLC were referred to both public and academic libraries and required almost one minute longer, or 2.17 minutes per book. Those requests using the TWX were referred only to academic libraries and because of their large decentralized collections it took them over four minutes to retrieve one book.

The test also showed that the percentage of requests filled by the supplying library varied little depending upon whether TWX or OCLC was used. The actual number did vary greatly because TWX lacked OCLC's capability to relay requests automatically and many requests never reached libraries who were designated as third to fifth on the TWX system (see Table E). Public libraries in FLIN filled more requests than the academic libraries because more were referred to them, but their fill-rate was lower. Whereas public libraries filled approximately thirty percent of those requests referred to them, the university libraries averaged over fifty percent (see Table F).

RESULTS OF THE TEST PERIOD

The State Library of Florida ended the test period March 31, 1981, after two months. During this time 3,469 requests were handled through FLIN on both tracks. Time was allowed to compile statistics, analyze the results, and to write the report of the test before FLIN directors were to meet in mid-May 1981 to decide on the future of FLIN.

The test period demonstrated that using the OCLC Interlibrary Loan Subsystem was more efficient and cost-effective than using TWX. However, using the closed-circuit teletype to send messages to the four resource center libraries was more efficient. The closed-circuit teletype is a dedicated installation that the State Library and these resource centers can send and receive messages at any time, without the downtime and computer procedures involved in using OCLC and without any additional cost beyond the $6,000 annual fee.

Verification was the single most important change. Finding specific locations for each item insured greater accuracy and quicker relay in handling the request. There was also a faster report to the borrowing library on requests that could not be supplied, either because requests could not be verified, or because no library had the item, or because, according to the protocols and the policies, no FLIN library had the item and the State Library could not go out-of-state.

Once placed on the OCLC track, the request moved quickly, with a higher fill rate and quicker report back to the State Library than over TWX. TWX required individual handling of each request, separate

filing and record keeping, and then repeating the procedure again if the first library did not supply the request. OCLC stores the request and automatically transfers it along to the next library if the first one does not supply it. Immediately after the test period ended, it took only a few days for the results of all the OCLC requests still in process to be received, while reports for the TWX requests were still arriving a month after the conclusion of the test.

Overall, greater use was made of all university libraries. Titles that formerly only went as far as the resource centers were often sent to university libraries, where they were supplied if the resource center copy was in use.

After the formal test period was over, the State Library reverted to using the closed-circuit system for all four resource centers. Since the verification process was backlogging, it was decided not to verify requests from correctional institutions. These make up one quarter of all requests handled and since these would normally only be sent to the resource centers over the closed-circuit teletype, it was decided to return to the old practice in this instance. It would take an increase of at least one additional staff member and another OCLC terminal to be able to encompass the full verification process.

RECOMMENDATIONS

1. The closed-circuit teletype system with the resource centers should be retained. This is still the most effective way of communicating with these libraries. Verifying of requests pinpoints locations and eliminates needless searching of requests not in their collections.
2. Use the OCLC Interlibrary Loan Subsystem for referring requests to the universities and out-of-state. This was proven to be much more efficient than TWX. The State Library should also be able to contact the resource centers over OCLC if an item shows one resource center in combination with university library locations. This would be the most efficient handling for this type of request.
3. Discontinue the use of TWX. For single locations it is just as effective to refer the request by mailing on an ALA form.

FORM A

TIME STUDY FOR LOANS SECTION STAFF

OCLC

DATE		JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTES
	Sending (Calling up record, assigning locations, filling in necessary information)				
	Message file maintenance				
	Keeping log				
	Verifying				

DATE		JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTES
	Sending (Calling up record, assigning locations, filling in necessary information)				
	Message file maintenance				
	Keeping log				
	Verifying				

DATE		JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTES
	Sending (Calling up record, assigning locations, filling in necessary information)				
	Message file maintenance				
	Keeping log				
	Verifying				

DATE		JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTES
	Sending (Calling up record, assigning locations, filling in necessary information)				
	Message file maintenance				
	Keeping log				
	Verifying				

FORM B

TIME STUDY FOR LOANS SECTION STAFF
MAIL

DATE		JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTES
	Typing ALA form				
	Proof reading				
	Filing				
	Answers				
	Mailing				
	Keeping log and preparation				
	Verifying				

DATE		JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTES
	Typing ALA form				
	Proof reading				
	Filing				
	Answers				
	Mailing				
	Keeping log and preparation				
	Verifying				

DATE		JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTES
	Typing ALA form				
	Proof reading				
	Filing				
	Answers				
	Keeping log and preparation				
	Verifying				

DATE		JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTES
	Typing ALA form				
	Proof reading				
	Filing				
	Answers				
	Keeping log and preparation				
	Verifying				

FORM C

TIME STUDY FOR LOANS SECTION STAFF

TWX

DATE	JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTE:
Preparing tape				
Sending tape				
Filing				
Answers				
Verification				
Preparation				
Checking TWX Bill against log				
Reprocessings				

DATE	JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTE
Preparing tape				
Sending tape				
Filing				
Answers				
Verification				
Preparation				
Checking TWX bill against log				
Reprocessings				

DATE	JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTE
Preparing tape				
Sending tape				
Filing				
Answers				
Verification				
Preparation				
Checking TWX bill against log				
Reprocessings				

FORM D

TIME STUDY FOR LOANS SECTION STAFF
CLOSED CIRCUIT TELETYPE

DATE		JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTES
	Sending list				
	Filing				
	Answers				
	Keeping log and preparation				
	Resending to second library if necessary				
	Verifying				

DATE		JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTES
	Sending list				
	Filing				
	Answers				
	Keeping log and preparation				
	Resending to second library if necessary				
	Verifying				

DATE		JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTES
	Sending list				
	Filing				
	Answers				
	Keeping log and preparation				
	Resending to second library if necessary				
	Verifying				

DATE		JOB CLASSIFICATION	NO. OF REQUESTS PROCESSED	LABOR TIME TO PREPARE, TRANSMIT THE REQUESTS	NOTES
	Sending list				
	Filing				
	Answers				
	Keeping log and preparation				
	Resending to second library if necessary				
	Verifying				

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LOG FOR LOANS SECTION STAFF

FORM E

OCLC

RQ#	DATE ENTERED	JOB CLASSIFICATION	THE # ON LENDER STRING WHICH FILLED THE REQUEST	DATE REPORTED SHIPPED	TURN-AROUND TIME	FILLED	NOT FILLED	NOTES

LOG FOR LOANS SECTION STAFF

FORM F
CLOSED CIRCUIT TELETYPE, TWX, MAIL

RQ#	DATE ENTERED	JOB CLASSIFICATION	ORIGINAL MODE OF TRANSMISSION	ADDITIONAL ATTEMPTS TO FILL EACH REQUEST	DATE REPORTED SHIPPED	TURN-AROUND TIME.	FILLED	NOT FILLED	NOTES

FORM G

TIME STUDY FOR FLIN
RESOURCE LIBRARIES

OCLC

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to print requests				
	Time to search requests				
	Time to retrieve material				
	Time to update transaction				
	Time to ship material				
	File maintenance				

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to print requests				
	Time to search requests				
	Time to retrieve material				
	Time to update transaction				
	Time to ship material				
	File maintenance				

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to print requests				
	Time to search requests				
	Time to retrieve material				
	Time to update transaction				
	Time to ship material				
	File maintenance				

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to print requests				
	Time to search requests				
	Time to retrieve material				
	Time to update transaction				
	Time to ship material				
	File maintenance				

FORM H

TIME STUDY FOR FLIN
RESOURCE LIBRARIES

CLOSED CIRCUIT TELETYPE

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to search the request				
	Time to retrieve material				
	Time to notify State Library				
	Time to ship material				
	File maintenance				

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to search the request				
	Time to retrieve material				
	Time to notify State Library				
	Time to ship material				
	File maintenance				

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to search the request				
	Time to retrieve material				
	Time to notify State Library				
	Time to ship material				
	File maintenance				

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to search the request				
	Time to retrieve material				
	Time to notify State Library				
	Time to ship material				
	File maintenance				

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to search the request				
	Time to retrieve material				
	Time to notify State Library				
	Time to ship material				
	File maintenance				

FORM I

TIME STUDY FOR FLIN
RESOURCE LIBRARIES

TWX

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to search requests				
	Time to retrieve material				
	Time to notify Sate Library				
	Time to ship material				
	File maintenance				

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to search requests				
	Time to retrieve material				
	Time to notify State Library				
	Time to ship material				
	File maintenance				

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to search requests				
	Time to retrieve material				
	Time to notify State Library				
	Time to ship material				
	File maintenance				

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to search requests				
	Time to retrieve material				
	Time to notify State Library				
	Time to ship material				
	File maintenance				

DATE		JOB CLASSIFICATION	NUMBER OF REQUESTS PROCESSED	LABOR TIME TO PROCESS REQUESTS	NOTES
	Time to search requests				
	Time to retrieve material				
	Time to notify State Library				
	Time to ship material				
	File maintenance				

LOG FOR FLIN RESOURCE LIBRARIES

FORM J
OCLC

RQ #	M OR S	DATE REQUEST RECEIVED	DATE FILLED	DATE NOT FILLED AND REASON	TURN AROUND TIME	NOTES

LOG FOR FLIN RESOURCE LIBRARIES

FORM K

TWX

RQ #	M OR S	DATE REQUEST RECEIVED	DATE FILLED	DATE NOT FILLED AND REASON	TURN-AROUND TIME	NOTES

LOG FOR FLIN RESOURCE LIBRARIES

FORM L
CLOSED CIRCUIT TELETYPE

RQ #	M OR S	DATE REQUEST RECEIVED	DATE FILLED	DATE NOT FILLED AND REASON	TURN-AROUND TIME	NOTES